

### REQUEST FOR RECONSIDERATION

The claims now in this application are Claims 5-10.

The claims have been amended to more clearly define the inventive aspects of Applicants' invention. No new matter has been added.

The rejections of Claims 1 and 2 under 35 U.S.C. 102(b) over Bergman et al. (US 4,340,836) are respectfully traversed.

Bergman et al. does not teach the claimed invention because the reference requires a "coiled coil" element (12). The coiled coil is formed by close-winding a primary wire of tungsten on a primary mandrel molybdenum, followed by coiling 3 to 4 turns of the primary coil on the shank (col. 3, lines 32 to 35). After coiling, the molybdenum mandrel is removed using, for example, a solution of hydrochloric and nitric acids that attacks molybdenum but not tungsten (col. 3, lines 35 to 38). According to the disclosure (col. 3, lines 41 to 44) the wound coiled coil is laser-welded with the tungsten shaft at its ends. The end of the tungsten shaft may be ball-shaped. The combination of the coiled coil structure and the shaft-ball shape reduces electrode erosion and a melting back at the tip of the electrode.

Bergman et al. discovered that to satisfy the critical temperature regime required during the starting phase, it is necessary to have a certain ratio of surface area to mass in the overwind and better results are achieved by a primary overwind not containing a mandrel, since rapid glow-to-arc transition desired for good maintenance and reduced ballast requirements can be more readily achieved (col. 2, lines 5-9).

In sharp contrast, the electrode body of Applicants' invention is formed from a coil, and there is no teaching that would motivate one to choose a coil in favor of Bergman's coiled coil. There is likewise no expectation of success taught in the reference for so

choosing. To the contrary, the critical features of Bergman's invention and the advantages achieved by the invention are based on achieving a critical temperature regime required during the starting phase by attaining a certain ratio of surface area to mass in the overwind, and better results are achieved by a primary overwind not containing a mandrel. Such a disclosure teaches a way from the simple coil arrangement of Applicant's electrode body.

Furthermore, in contrast to Berman's electrode, fixing of the coil to the pin at more than one point is not necessary in Applicants' invention. In Applicants' invention, this fixing serves to retain the coil on the pin, and may be anywhere on the pin.

For these reasons, it is believed that the rejection over Berman is unsustainable, and withdrawal of the rejection is kindly solicited.

The rejections of Claims 3 and 4 under 35 U.S.C. 103(a) over Bergman et al. in view of Petro et al. (U.S. 3,822,455) are respectfully traversed.

For the reasons already set forth, the Bergman et al. reference does not disclose or suggest the invention as presently claimed.

The additional teaching of Petro et al. does not cure the basic deficiencies of the primary reference.

Petro et al. also teaches a coiled-coil intermediate product for ultimate use in an electrode. The coiled coil is put on a mandrel, whose ends are fused to beads, or the like, in order to facilitate transportation and storage of the coiled coils. The mandrels are removed later by chemical means. These barrel-less electrode coils have a basket-like structure for electron emission. (col.1, lines 32 to 36; col. 3, lines 51 to 57).

Contrary to the Examiner's apparent understanding, it is not an object of the Applicants' invention to melt the wire ends to beads. To the contrary, the coil wire is to be

melted back as far as the outer diameter of the wire winding so that it does not protrude from the wire winding or only does so to an insignificant degree (page 2, last paragraph, of the specification).

Applicants assert that there is no evidence found in Bergman et al. or Petro et al. as to why one of ordinary skill in the art would be motivated to modify Bergman's electrode to become what Applicants have claimed, especially with regard to the specific arrangement of the coil. Clearly, the disclosure of Petro et al. does not suggest disclose a simple coil, and thus provides no motivation to modify Bergman et al. to arrive at what Applicants now claim.

Based on the foregoing, Applicants assert that the Bergman et al. and Petro et al. references, when taken as a whole for what they individually and in combination reasonably teach one of skill in this art, do not disclose or render the claimed invention obvious. Applicants' choice of claim limitations has been determined from what has solved the problem before them, and there is simply no motivation to modify or choose from Bergman et al. and Petro et al.

In view of the deficiencies in the art, none of the present claims are *prima facie* obvious, and, accordingly, withdrawal of the rejections under 35 U.S.C. 103(a) is respectfully requested.

Applicants respectfully submit that the present invention is now in condition for allowance and early notice of such action is earnestly solicited.

**The Applicants hereby petition the Commissioner of Patents and Trademarks to extend the time for reply to the decision dated April 24, 2003 for three (3) months from July 24, 2003 to October 24, 2003. A duly completed credit card authorization form is**

attached to effect payment of the extension fee.

Please charge any shortage in fees due in connection with the filing of this paper to  
Deposit Account No. 04-0753. Please credit any excess fees to such deposit account.

Respectfully submitted



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